



New Product

SUM70N06-11

Vishay Siliconix

N-Channel 60-V (D-S), 175°C MOSFET

PRODUCT SUMMARY

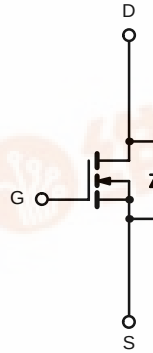
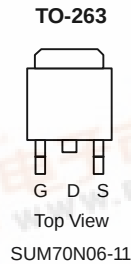
$V_{(BR)DSS}$ (V)	$r_{DS(on)}$ (Ω)	I_D (A)
60	0.011	70

FEATURES

- TrenchFET® Power MOSFET
- 175°C Junction Temperature
- New Low Thermal Resistance Package

APPLICATIONS

- Automotive and Industrial



N-Channel MOSFET

ABSOLUTE MAXIMUM RATINGS ($T_C = 25^\circ\text{C}$ UNLESS OTHERWISE NOTED)

Parameter	Symbol	Limit	Unit
Gate-Source Voltage	V_{GS}	± 20	V
Continuous Drain Current ($T_J = 175^\circ\text{C}$)	I_D	70	A
		49	
Pulsed Drain Current	I_{DM}	160	
Avalanche Current	I_{AR}	35	
Repetitive Avalanche Energy ^a	E_{AR}	61	mJ
Power Dissipation	P_D	120 ^b	W
		3.75	
Operating Junction and Storage Temperature Range	T_J, T_{stg}	-55 to 175	$^\circ\text{C}$

THERMAL RESISTANCE RATINGS

Parameter	Symbol	Limit	Unit
Junction-to-Ambient—PCB Mount ^c	R_{thJA}	40	$^\circ\text{C/W}$
Junction-to-Case	R_{thJC}	1.25	

Notes:

- a. Duty cycle $\leq 1\%$.
b. See SOA curve for voltage derating.
c. When mounted on 1" square PCB (FR-4 material).

For SPICE model information via the Worldwide Web: <http://www.vishay.com/www/product/spice.htm>

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SPECIFICATIONS (T _J = 25 °C UNLESS OTHERWISE NOTED)						
Parameter	Symbol	Test Condition	Min	Typ	Max	Unit
Static						
Drain-Source Breakdown Voltage	V _{(BR)DSS}	V _{GS} = 0 V, I _D = 250 μA	60			V
Gate Threshold Voltage	V _{GS(th)}	V _{DS} = V _{GS} , I _{DS} = 250 μA	2.0	3.0	4.0	
Gate-Body Leakage	I _{GSS}	V _{DS} = 0 V, V _{GS} = ±20 V			±100	nA
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} = 48 V, V _{GS} = 0 V			1	μA
		V _{DS} = 48 V, V _{GS} = 0 V, T _J = 125 °C			50	
		V _{DS} = 48 V, V _{GS} = 0 V, T _J = 175 °C			250	
On-State Drain Current ^a	I _{D(on)}	V _{DS} = 5 V, V _{GS} = 10 V	70			A
Drain-Source On-State Resistance ^a	r _{DS(on)}	V _{GS} = 10 V, I _D = 30 A		0.0085	0.011	Ω
		V _{GS} = 10 V, I _D = 30 A, T _J = 125 °C			0.019	
		V _{GS} = 10 V, I _D = 30 A, T _J = 175 °C			0.025	
Forward Transconductance ^a	g _{fs}	V _{DS} = 15 V, I _D = 30 A	25	50		S
Dynamic ^b						
Input Capacitance	C _{iss}	V _{GS} = 0 V, V _{DS} = 25 V, f = 1 MHz		2500		pF
Output Capacitance	C _{oss}			400		
Reverse Transfer Capacitance	C _{rss}			165		
Total Gate Charge ^c	Q _g	V _{DS} = 30 V, V _{GS} = 10 V, I _D = 70 A		40	60	nC
Gate-Source Charge ^c	Q _{gs}			13		
Gate-Drain Charge ^c	Q _{gd}			12		
Turn-On Delay Time ^c	t _{d(on)}	V _{DD} = 30 V, R _L = 0.43 Ω I _D ≈ 70 A, V _{GEN} = 10 V, R _G = 2.5 Ω		15	25	ns
Rise Time ^c	t _r			11	20	
Turn-Off Delay Time ^c	t _{d(off)}			30	50	
Fall Time ^c	t _f			7	15	
Source-Drain Diode Ratings and Characteristics (T _C = 25 °C) ^b						
Continuous Current	I _S				70	A
Pulsed Current	I _{SM}				160	
Forward Voltage ^a	V _{SD}	I _F = 50 A, V _{GS} = 0 V		1.0	1.5	V
Reverse Recovery Time	t _{rr}	I _F = 70 A, di/dt = 100 A/μs		40	80	ns
Peak Reverse Recovery Current	I _{RM(REC)}			1.7	3.5	A
Reverse Recovery Charge	Q _{rr}			0.034	0.14	μC

Notes:

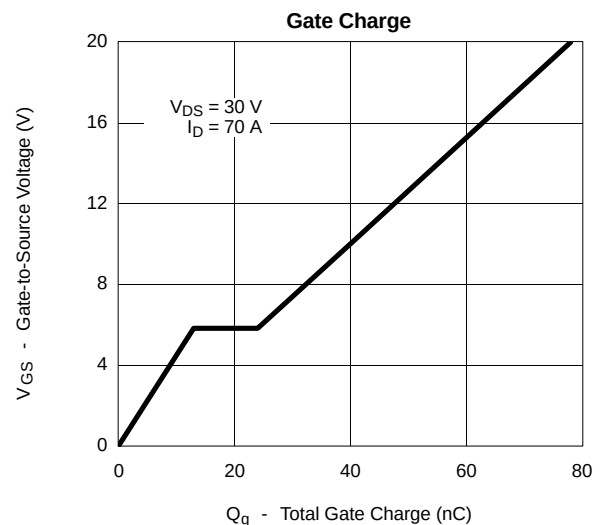
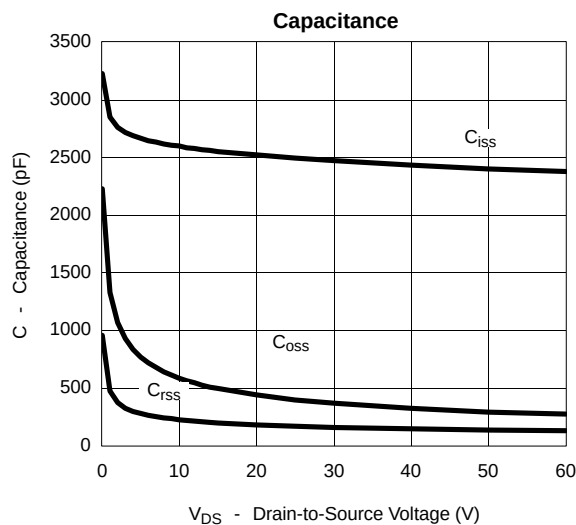
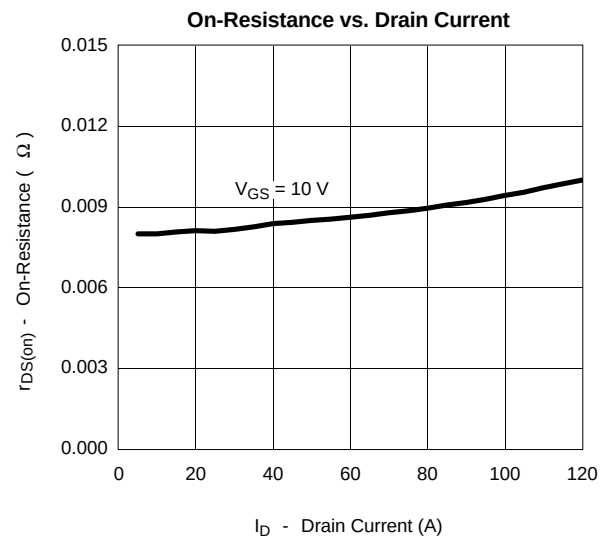
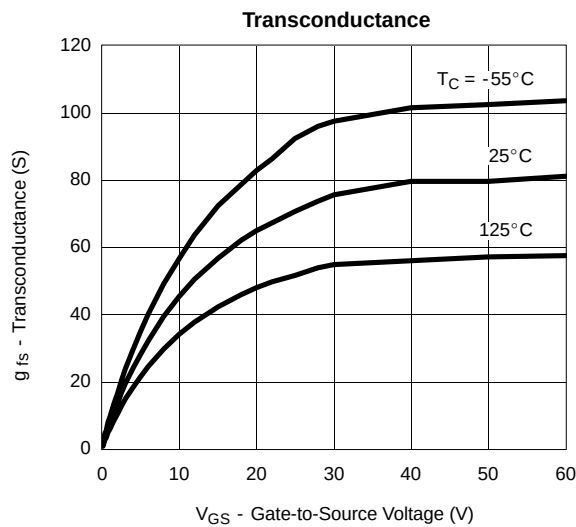
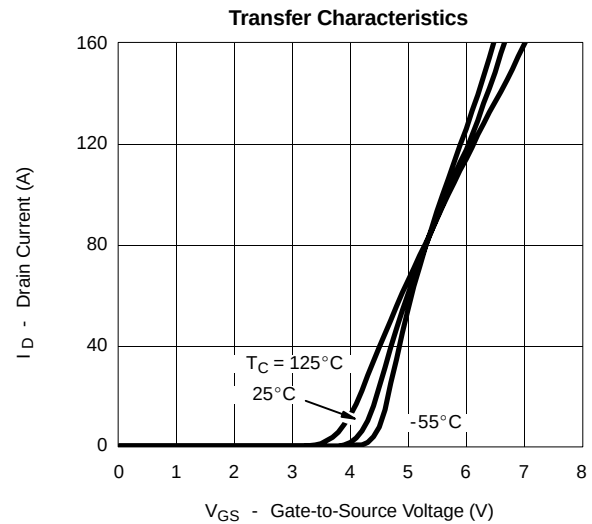
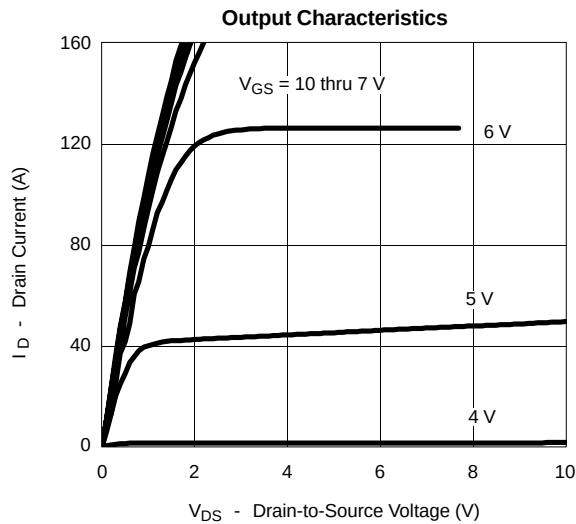
- Pulse test; pulse width ≤ 300 μs, duty cycle ≤ 2%.
- Guaranteed by design, not subject to production testing.
- Independent of operating temperature.

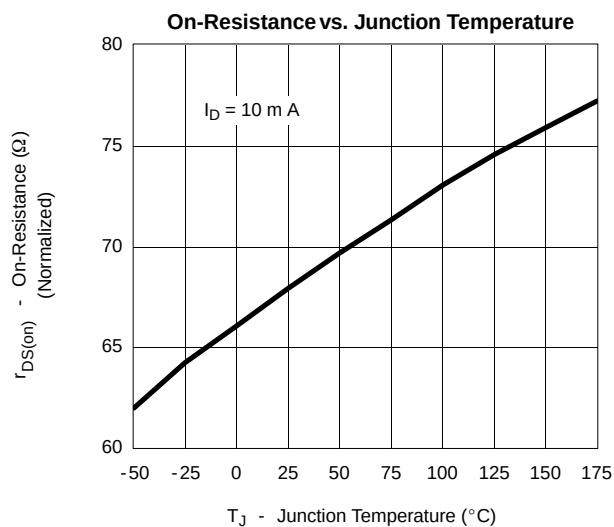
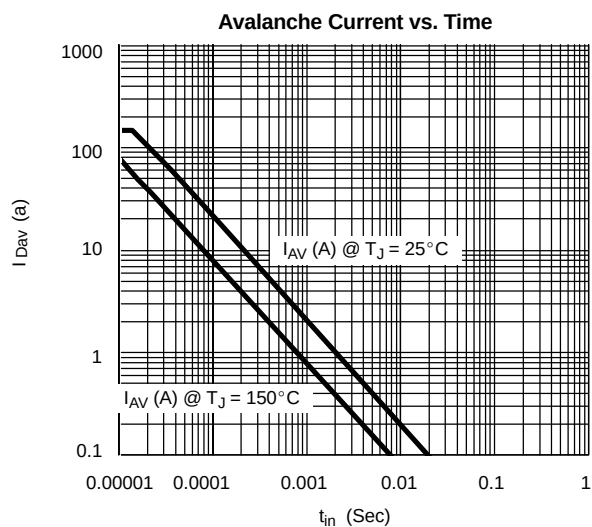
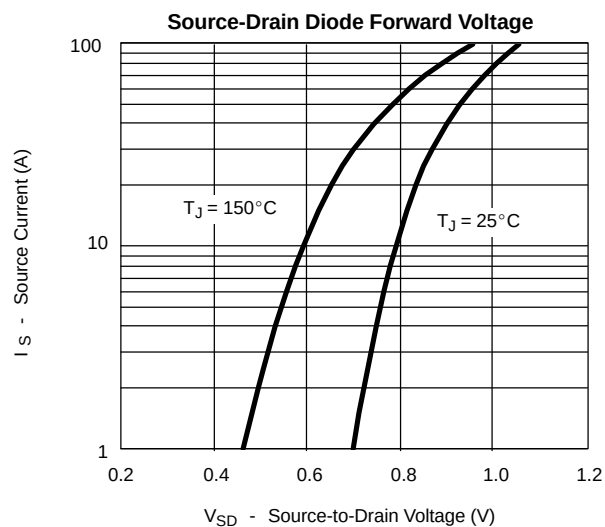
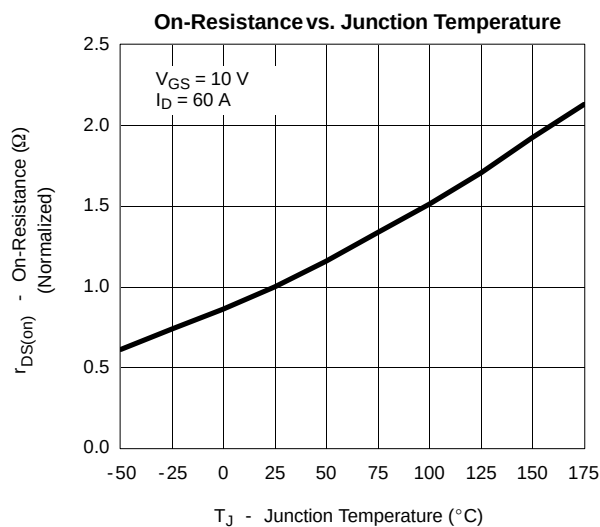


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TYPICAL CHARACTERISTICS (25°C UNLESS NOTED)



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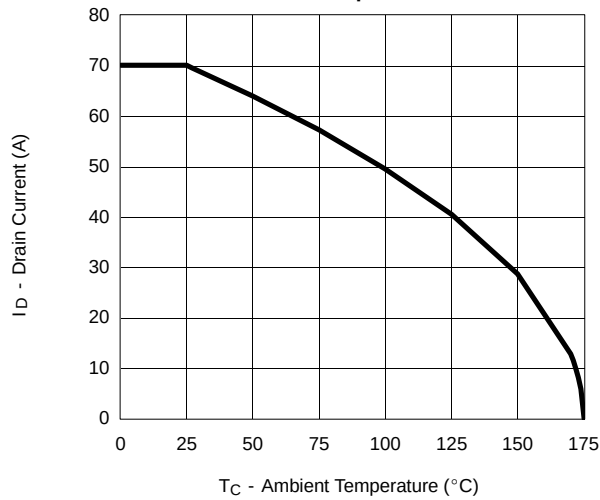


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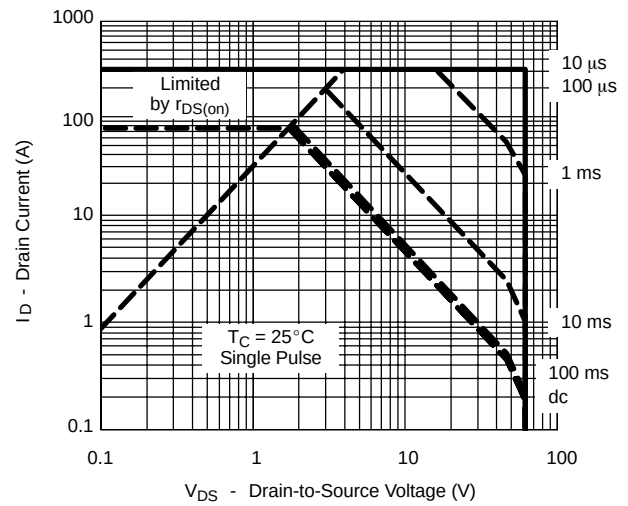
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THERMAL RATINGS

Maximum Drain Current vs.
Case Temperature



Safe Operating Area



Normalized Thermal Transient Impedance, Junction-to-Case

